

#### **Abstract of EP0418481**

In order to improve the thermal efficiency for the smelting of metals in a melting and casting furnace which can be subjected to oscillating motions, and to improve the purity and homogeneity of the melt, it is proposed to circulate the melt in a multi-chamber furnace by means of the oscillating motions and to control the circulation rate of the melt by means of passage orifices of controllable cross-section. The charging material to be smelted is here introduced into a charging trough (18) and only flooded by the melt for part of the time, so that only small quantities of interfering metallic constituents of the charging material can dissolve in the melt. Since the melt in at least one chamber can flow forward into the neighbouring chamber only below the bath level, the dross arising is automatically collected in this chamber, so that the melt is self-cleaning. As the melting unit for carrying out the process, a furnace is proposed whose furnace space (2) is separated into a preheating chamber (5), a balancing chamber (6) and a discharge chamber (7), the charging material in the preheating chamber (5) being introduced in a raised charging trough (18) which is flooded for only part of the time by the melt due to the oscillating motion. The individual chambers (5, 6, 7) are mutually connected by passage orifices (8, 9, 10, 11) for allowing the melt to pass through and have passages (12, 13) for passing through heating gases and flue gases, resulting in optimised preheating of the charging material in the preheating chamber (5).